

## THE SNOWY OWL INVASION OF OHIO IN 1930-1931

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The Snowy Owl (*Nyctea nyctea*) regularly winters far to the south of its breeding range, some birds probably crossing our northern border into the United States every year, though in very small numbers. At more or less regular intervals, the species in its migratory wanderings penetrates far into the northern part of the United States in considerable numbers. Such invasions have occurred in 1876-77, 1882-83, 1889-90, 1892-93, 1896-97, 1901-02, 1905-06, 1917-18, 1926-27, and again recently in 1930-31. Snowy Owls are also known to have entered Ohio in some numbers in 1909-10, 1910-11, 1912-13, and 1921-22.

Huntington (1931) has summarized the theoretical biological, meteorological, and astronomical causes of periodic fluctuations in numbers of a species as presented at the Matamek conference on biological cycles in 1931. Regardless of what these causes may be, there is abundant evidence to show that there are well marked cyclical fluctuations in the abundance of northern mice, lemmings, the arctic ptarmigan, and other animals in the arctic regions which comprise the food supply of the Snowy Owl.

To determine the extent of these periodic southward migrations of the Snowy Owl or to make an approximate estimate of the number of individuals of the species involved, is a gigantic task—one which requires the coöperative efforts of hundreds of field workers in every section of eastern United States and Canada. To make similar observations of the species during the nesting season or throughout the normal winter range would be practically impossible at the present time.

Fortunately, the prey of the Snowy Owl is practically the same as that of the arctic fox. An abundance of the food species is followed by a rapid increase in numbers of both foxes and owls. When the food supply fails, the Snowy Owl apparently migrates southward to areas unaffected by the food shortage while the arctic foxes are quickly reduced in numbers by starvation and trapping in large numbers.

The dates of the Snowy Owl invasions as recorded in ornithological publications synchronize almost perfectly with reported fluctuations in numbers of arctic foxes. A record catch of foxes by Canadian trappers is followed by a definite invasion of Snowy Owls. These paired maximums and invasions occur at intervals of three to five, but usually, four years. Gross (1931) has compared the dates for Snowy Owl invasions with the years of maximum numbers of arctic

foxes as determined by Mr. Charles Elton, of Oxford, England, who tabulated the number of arctic fox pelts sold by trappers at the Fort Chima post of the Hudson Bay Company from 1872 to 1930.

Dr. Gross lists 1909, 1913, and 1921 as years in which arctic foxes reached maximum numbers but with no known definite accompanying Snowy Owl invasion. Many specimens of the species, however, were taken in Ohio during the winter of 1909-1910 and 1912-1913 and at least one specimen during the winter of 1921-1922. Thus, we see that the records for at least forty years indicate a very definite relationship between the maximum number of arctic foxes and the Snowy Owl invasions (and the abundance of animals comprising the food supply of both species).

During the winter of 1930-1931 from the beginning of the Snowy Owl invasion, the writer endeavored to compile as complete a list as possible of all Ohio records. All taxidermists of the state were notified of the work and requested to mail in records. The aid of each of approximately seventy game protectors of the Ohio Division of Conservation was solicited. A large number of records came from this source, as many protectors interviewed fifty or more observers in their county territory concerning the presence of "white owls". During the winter season, the writer personally visited and engaged in other ornithological research in fifty-nine of the eighty-eight counties of the state, interviewing some 320 observers concerning records. In addition numerous notices were published in local and state papers and 195 questionnaires were mailed to ornithologists of the state, including all Ohio members of the Wilson Ornithological Club.

The response of these efforts was most encouraging, splendid coöperation on the part of everyone concerned making it possible to tabulate what certainly is one of the most complete numerical counts ever made in an area of state size. More than three-fourths of the records were received from two or more sources and the capture of one bird was actually listed in twelve different reports. The writer wishes to acknowledge his indebtedness to the several hundred coöperators who so willingly furnished information.

The figures tabulated below certainly do represent a rather high percentage of all birds actually observed or captured by man in the state during the invasion. How many more actually crossed our borders but escaped detection, we can only surmise. Because of the economic depression, many hunters could not afford to pay for the mounting of birds shot or trapped. Several taxidermists reported a big decrease in receipts and many birds left for mounting uncalled for.

Certainly a much larger percentage of Snowy Owls captured failed to find their way to taxidermists (the best source of records) than in former years. Also the Snowy Owl invasion of 1926-27 made mounted birds so common that they were no longer valued by sportsmen and rural people as unusual or valuable prizes.

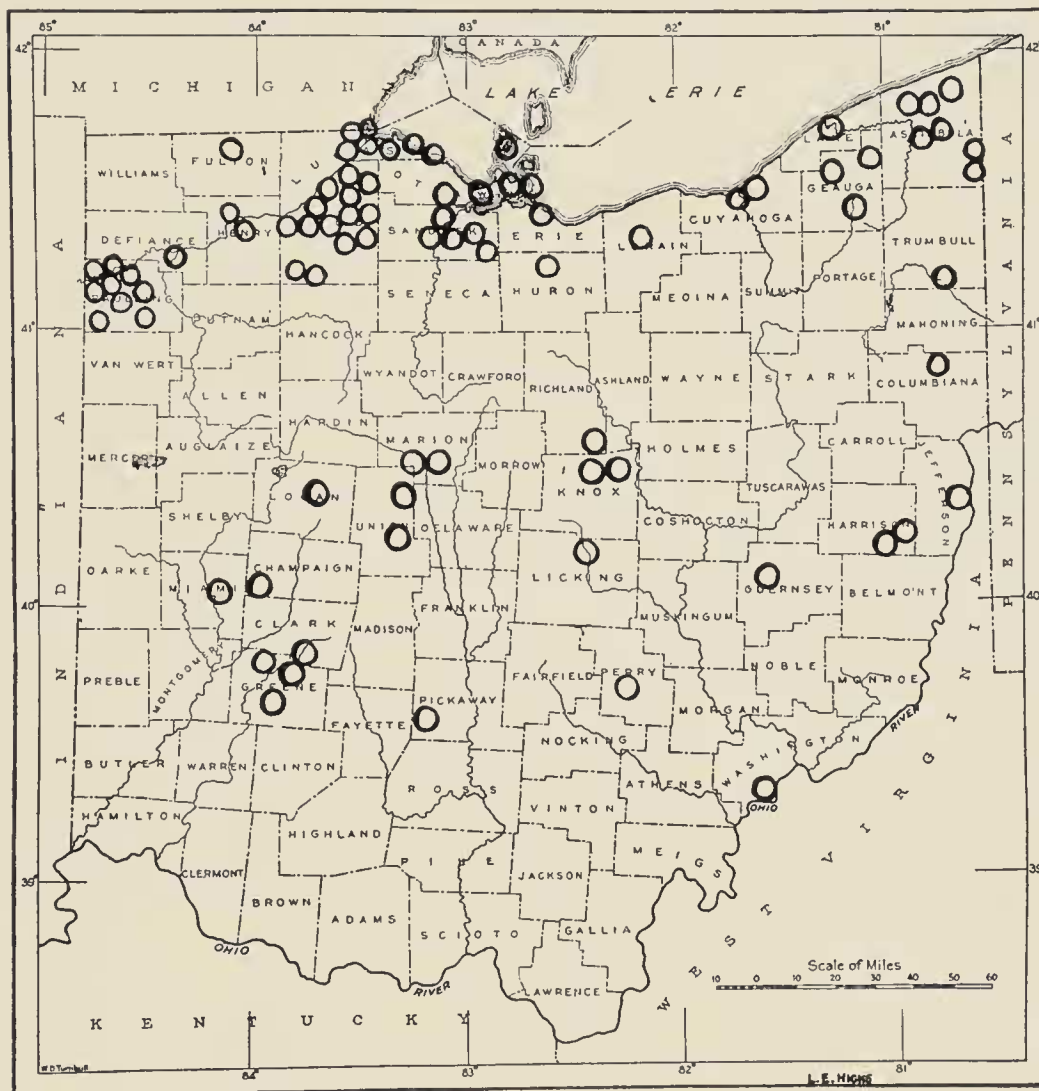


FIG. 55. Snowy Owl Invasion of Ohio in 1930-31.

Gross (1927 and 1931) records 2363 Snowy Owls reported in the United States during the 1926-27 invasion and 1313 birds in southern Canada and the United States in 1930-31. Ohio reported 138 birds in 1926-27 (Thomas, 1928) and 126 in 1930-31. Numbers reported in some other states during the two invasions are as follows: Maine, 589-59; Massachusetts, 294-53; Connecticut, 58-16; New York, 495-63; Michigan, 592-29; and Minnesota, 103-44. Exclusive of Ohio records, and considering only the actual number of birds reported which is



thought to be representative of the total migratory movement, the 1930-31 invasion was only about one-sixth as large as the 1926-27 invasion. This would hardly seem true of Ohio. In 1926-27 the species received wide-spread publicity in the state and the 138 records compiled by Mr. Thomas certainly are fairly representative of the actual numbers present at that time. With nearly as many birds (126) reported in 1930-31, it would seem that this recent invasion must have been at least half as large as the first. Also, the height of the invasion, considering the whole of eastern United States and Canada came near the middle of November in both cases. The height in numbers in Ohio, as determined by Mr. Thomas in 1926-27, took place about December 15, while the height in 1930-31 did not occur before January 10. This very considerable variation in the date of appearance in maximum numbers is indeed interesting. Its significance, though perhaps of importance, is hardly evident at the present time.

Mr. Thomas lists 138 records from 83 localities and 36 counties; the present list includes 126 records from 82 localities and 34 counties. In 1926-27, 92, or 67 per cent, of the birds reported were killed or captured while in the recent invasion only 51, or 40 per cent, suffered the same fate. This, perhaps, is largely due to the fact that the height of the migration came nearly a month later in 1930-31 or mostly following and not during the hunting season. Also, in 1926-27 most of the birds reported appeared to be in a somewhat dazed condition and not at all at home in their new environment. Many were absolutely without fear and others appeared sick. Numerous birds at that time were captured by hand, flying into automobiles or attracted by bright lights. A number were struck down by railroad locomotives, picked up while in an exhausted condition or found in some unusual situation which hardly seemed a logical stopping place for a normal bird of prey. Of eleven stomachs examined by the writer at that time, ten were entirely empty while one contained a small quantity of chicken feathers. Nearly all birds handled were considerably emaciated.

In 1930-31 records of birds taken under unusual conditions were very few. Most birds captured or observed appeared normal in every respect and not dazed or emaciated but as much at home as our native owls. This undoubtedly accounts for a much lower percentage of the birds being killed or captured and leads me to believe that in Ohio, and perhaps elsewhere, the 1930-31 invasion did approach that of

1926-27 in numbers much more closely than the figures actually reported would indicate. In 1930-31 a large number of the records listed were of birds reported to have been present in some particular locality for from two to nine weeks, the birds being observed almost daily hunting over stubble fields or bottom lands where meadow mice were abundant. All observers questioned were of the opinion that certainly a large percentage of the birds of this recent invasion did succeed in returning to northern regions in the spring, escaping the tragic fates of most of the owls of 1926-27. Of nine stomachs examined in 1930-31, all but one contained some food, including two Bob-whites, parts of a Ring-necked Pheasant, a sparrow, remains of a Hungarian Partridge, one rat, bits of two chickens, and eight mice.

## COMPARISON OF SNOWY OWL INVASIONS IN OHIO

	1926-27	1930-31
Counties of Ohio reporting Snowy Owls.....	36	34
Number of localities reporting Snowy Owls.....	83	82
Number of individuals reported.....	138	126
Number of individuals killed or captured.....	92	51
Percentage of total number killed or captured.....	67%	40%
Number of individuals in northern third of Ohio.....	100	101
Date of earliest record.....	11-3-26	10-15-30
Height of migration.....	12-15-26	1-12-31
Date of latest record.....	5-14-27	5-12-31
Number of individuals reported by months—		
October .....	0	2
November .....	25	5
December .....	49	19
January .....	6	39
February .....	11	33
March .....	5	6
April .....	1	4
May .....	1	1

The distribution of records received, as the map shows, was northerly, four-fifths of the returns being from the Lake Erie counties or the counties of northwestern Ohio along the Maumee River, especially Paulding, Defiance, Henry, Lucas, Wood, Ottawa, Sandusky, Erie, and Ashtabula Counties. Few birds penetrated to the southern part of the state but records were much commoner throughout central Ohio than in a belt from twenty to sixty miles south of Lake Erie. On the whole the distribution of records is remarkably similar to that of the 1926-27 invasion.

## BIBLIOGRAPHY

- Anderson, R. M., 1907. Birds of Iowa, p. 266.
- Bailey, Bert Heald, 1918. The Raptorial Birds of Iowa, Iowa Geol. Surv. Bull. No. 6, Des Moines, Ia.
- Baird, S. F., T. M. Brewer, R. Ridgway, 1905. A History of North American Land Birds, Vol. III. Little, Brown and Co., Boston.
- Barrows, Walter Bradford, 1912. Michigan Bird Life, Special Bull. of Dept. of Zool. and Physiology of Mich. Agr. College. Mich. Agri. Coll. Press.
- Bendire, Capt. Chas., 1892. Life Histories of North American Birds, p. 389.
- Bruner, L., R. H. Wolcott, and M. H. Swenk, 1909. A Preliminary Review of the Birds of Nebraska, p. 56.
- Bunker, C. D., 1913. Birds of Kansas, p. 148.
- Butler, A. W., 1897. Birds of Indiana.
- Chapman, F. M., 1912. Birds of Eastern North America, p. 315.
- Cory, C. B., 1909. Birds of Illinois and Wisconsin, p. 497.
- Dawson, William Leon, 1903. Birds of Ohio, Wheaton Publishing Co., Columbus, Ohio.
- Deane, Ruthven, 1902. Unusual Abundance of the Snowy Owl (*Nyctea nyctea*) in New England and Canada, Auk, Vol. 19, pp. 271-279.
- Deane, Ruthven, 1906. Another Large Flight of Snowy Owls, Auk, Vol. 23, pp. 100-101.
- Deane, Ruthven, 1907. The Snowy Owl (*Nyctea nyctea*) not Generally Abundant in the Winter of 1906-1907, Auk, Vol. 24, pp. 217-219.
- Deane, Ruthven, 1872. Snowy Owl Migrations, Bull. Nutt. Ornith. Club, Vol. 2, p. 9.
- Fisher, A. K., 1893. Hawks and Owls of the United States, p. 183.
- Forbush, Edward Howe, 1927. Birds of Massachusetts, Part II, Commonwealth of Mass., Norwood Press, Norwood, Mass.
- Gross, Alfred O., 1927. The Snowy Owl Migration of 1926-27, Auk, Vol. XLIV, No. 4.
- Gross, Alfred O., 1931. Snowy Owl Migration, 1930-1931, Auk, Vol. XLVIII, pp. 501-511.
- Goss, N. S., 1891. History of the Birds of Kansas, p. 307.
- Hatch, P. L., 1892. Birds of Minnesota, p. 217.
- Huntington, Ellsworth, 1931. The Matemck Conference on Biological Cycles, 1931. (Discussion of periodic fluctuations in numbers of a species), Science, Vol. 74, No. 1914. Sept. 4.
- Kirkpatrick, John, 1859. Rapacious Birds of Ohio. Ohio Agr. Rept. for 1858, pp. 341-383.
- Jones, Lynds, 1903. The Birds of Ohio, p. 108. Ohio Academy of Science, Special Paper No. 6. Oct., 1903, Columbus, Ohio.
- Ridgway, R., 1889. Ornithology of Illinois, p. 422.
- Ridgway, R., 1914. Birds of North and Middle America. Part VI, Bull. 50. U. S. National Museum, p. 768.
- Sutton, George Miksch, 1927. Snowy Owls in Pennsylvania. Cardinal, July.
- Sutton, George Miksch, 1928. The Birds of the Pymatuning Swamp and Conneant Lake, Crawford Co., Pa. Annals of the Carnegie Museum, Pittsburgh, Pa., Vol. XVIII, pp. 138-139. (Reprinted separately, Mar. 31, 1928).
- Thomas, Edward S., 1928. The Snowy Owl Invasion of Ohio in 1926-1927. Ohio State Museum Bulletin, Vol. I, No. 1, pp. 64-69.
- Warren, B. H., 1888. Birds of Pennsylvania, p. 118.
- Wheaton, J. M., 1879. Birds of Ohio. Geol. Surv. of Ohio. Vol. IV, pp. 413-414.
- Woodruff, F. M., 1907. Birds of the Chicago Area, p. 106.

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